DOE NEWS

**For Immediate Release**
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# DOE Releases Potential Contamination Transport Model Report for the Rulison Historic Nuclear Explosion Site

(Grand Junction, CO) — The U.S. Department of Energy Office of Legacy Management (DOE-LM) today announced the availability of a modeling report conducted to predict potential migration of radionuclides at the underground nuclear explosion site in Rulison, Colorado. The report, *Tritium Transport at the Rulison Site, a Nuclear-Stimulated Low-Permeability Natural Gas Reservoir*, evaluates potential radionuclide migration from the nuclear explosion site with the presence of nearby natural gas drilling. The report will be used as a tool in the decision process to determine the long-term management of the site.

Project Rulison was the second natural gas reservoir stimulation experiment in the Plowshare Program, which was designed to develop peaceful uses for nuclear energy. On September 10, 1969, the U.S. Atomic Energy Commission, a predecessor agency of DOE, detonated a 40-kiloton nuclear device 8,426 feet below the ground surface in an attempt to release commercially marketable quantities of natural gas. Contamination was subsequently removed from the surface of the blast site. No feasible technology exists to remove subsurface radioactive contamination in or around the test cavity.

The modeling report assesses tritium migration under two scenarios: (1) no drilling near the site and (2) natural gas production conditions. The model evaluates tritium migration from the Rulison detonation point to a hypothetical gas production well in the most vulnerable location outside of the current drilling exclusion area. Conceptual flow and transport models were developed to simulate tritium migration. Tritium was selected for the model because the most

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likely transport pathway from the detonation zone to the surface would be through tritiated water vapor to a well producing gas. Results indicate that tritium at concentrations above natural background levels would not reach the hypothetical production well in 95 percent of simulations. Tritium is produced naturally in the upper atmosphere when cosmic rays strike nitrogen molecules in the air and is also produced during nuclear explosions. An average natural background level of tritium is three picocuries per liter. A curie is a measure of radioactivity; "pico" means one-trillionth of a unit. Rainwater contains about 25 picocuries of tritium per liter.

"This report represents a significant technical milestone to move forward with the long-term management of the site and to ensure that the public's health and welfare and the environment are protected," said Tom Pauling, DOE-LM. The report will be reviewed by staff from the Colorado Oil and Gas Conservation Commission and the Colorado Department of Public Health and Environment, two state agencies involved with regulating the site.

The report is available on the DOE-LM website at http://www.lm.doe.gov/land/sites/co/rulison/rulison.htm. A hard copy of the report can be requested by calling 1-866-559-8316 (toll free) or by sending an e-mail to jmiller@lm.doe.gov.

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